

### **REMARKS**

Claims 1, 3-12, 14-16, 18-26, 28-37, and 39-41, 43-52, 54, and 55 are pending in the application.

By the foregoing Amendment, claims 1, 3-5, 8, 16, 20-22, 25, 26, 28-30, 33, 34, 41, 43, 45 and 48 are amended. Claims 2, 13, 17, 27, 38, 42, and 53 are canceled without prejudice or disclaimer.

Independent claims 1, 16, 20, 26, and 41 have been amended to incorporate various limitations from claims 2, 13, 17, 27, 38, 42, and 53, as a result of which claims 2, 13, 17, 27, 38, 42, and 53 are canceled. Claims 1, 16, 20, 26, and 41 are also amended for ease of readability. Claims 3, 28, 30, 43, and 45 are amended to change their dependencies in light of the cancellation of claims 2, 13, 27, 38, and 42, and for consistency with the amendments to their base claims.

These changes are believed not to introduce new matter, and entry of the Amendment is respectfully requested.

Based on the above Amendment and the following Remarks, Applicant respectfully requests that the Examiner reconsider all outstanding objections and rejections, and withdraw them.

#### **Rejection under 35 U.S.C. § 101**

In paragraph 6 of the Office Action, claims 26-40 were rejected as being directed towards non-statutory subject matter under section 101. Claims 27 and 38 have been canceled. This rejection is respectfully traversed with respect to the remaining claims.

The Office Action states that the term “computer usable storage medium” is not fully explained in the specification, and therefore “has been interpreted to include signals and carrier waves, which are non-statutory,” citing MPEP 2106.01.

First, it is noted that the limitation is not “computer usable storage medium,” but is “a computer usable storage medium *having computer readable program code means embodied in the medium.*” Ignoring the italicized language has resulted in the Office Action misconstruing or misapplying MPEP 2106.01, which reads in pertinent part:

Descriptive material can be characterized as either “functional descriptive material” or “nonfunctional descriptive material.” In this context, “functional descriptive material” consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of “data structure” is “a physical or logical relationship among data elements, designed to support specific data manipulation functions.” *The New IEEE Standard Dictionary of Electrical and Electronics Terms* 308 (5th ed. 1993).) “Nonfunctional descriptive material” includes but is not limited to music, literary works, and a compilation or mere arrangement of data.

Both types of “descriptive material” are nonstatutory when claimed as descriptive material *per se*, 33 F.3d at 1360, 31 USPQ2d at 1759. When functional descriptive material is recorded on some computer-readable medium, it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994)(discussing patentable weight of data structure limitations in the context of a statutory claim to a data structure stored on a computer readable medium that increases computer efficiency) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure *per se* held nonstatutory).

When nonfunctional descriptive material is recorded on some computer-readable medium, in a computer or on an electromagnetic carrier signal, it is not statutory since no requisite functionality is present to satisfy the practical application requirement.

In the case of the present claims, they recite “functional descriptive material” because they “consist of data structures and computer programs which impart functionality when employed as a computer component.” Because this functional descriptive material “is recorded

on some computer-readable medium, it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized.”

Even if the computer usable storage medium recited in the claims does “include signals and carrier waves,” per the interpretation in the Office Action, the claims still would recite statutory subject matter because they recite *functional* descriptive material. According to MPEP 2106.01, it is only when “nonfunctional descriptive material is recorded on some computer-readable medium, in a computer or on an electromagnetic carrier signal, [that] it is not statutory.”

In view of the foregoing, it is respectfully submitted that the claims recite statutory subject matter under section 101; and that the rejection should be withdrawn.

#### Rejection under 35 U.S.C. § 112, ¶ 1

In paragraph 8 of the Office Action, claim 16 is rejected under section 112, first paragraph, as being a “single means claim” for which the disclosure is non-enabling, citing section 2164.08(a) of the MPEP. This rejection is respectfully traversed.

MPEP 2164.08(a) refers to claims written in “means plus function” format. Claim 16 is not written in this format. On the contrary, claim 16 does not recite any “means.” Accordingly, it is respectfully submitted that MPEP 2164.08(a) is inapplicable to claim 16, and that the rejection is in error and should be withdrawn.

### Rejection under 35 U.S.C. § 112, ¶ 2

#### 1. Claims 4, 29, and 44

In paragraph 10 of the Office Action, claims 4, 29, and 44 are rejected under section 112, second paragraph, as being indefinite due to the recitation of “other interesting attributes of the text.” This rejection is believed to be overcome by the deletion of “other interesting attributes of the text” from claims 4, 29, and 44.

#### 2. Claims 8, 25, 33, and 48

In paragraph 11 of the Office Action, claims 8, 25, 33, and 48 were rejected under section 112, second paragraph on the basis that the language “constituent attributes assigned yes-no values to patterns of base tokens, where the entire pattern is considered to be a single constituent with respect to some annotation value” is considered to be unclear. This rejection is believed to be overcome by the above amendments to claims 8, 25, 33, and 48.

### Rejections under 35 U.S.C. § 102

In paragraph 13 of the Office Action, claims 1-4, 8-10, 12, 14-16, 18-21, 25-30<sup>1</sup>, 33-35, 37, 39, 41-44<sup>2</sup>, 48-50, 52, 54, and 55 are rejected under section 102(b) as being anticipated by Cunningham et al. (GATE User Guide). This rejection is believed to be overcome by the above amendment of independent claims 1, 16, 20, 26, and 41.

The present invention is directed to a fact extraction tool set (“FEX”) that extracts targeted pieces of information from text using linguistic and pattern matching technologies, and

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<sup>1</sup> Based on the dependency of the claims, it is believed that claims 25-29, rather than claims 25-30, should be listed in the rejection.

<sup>2</sup> Based on the dependency of the claims, it is believed that claims 40-44, rather than claims 41-44, should be listed in the rejection.

in particular, text annotation and fact extraction, at least in part by assigning attributes to the parts of the text. These attributes may include tokenization, orthographic, text normalization, part of speech tags, sentence boundaries, parse trees, and syntactic, semantic, and pragmatic attribute tagging and other interesting attributes of the text.

The fact extraction tool set takes a text passage such as a document, sentence, query, or any other text string, breaks it into its base tokens, and annotates those tokens and patterns of tokens with a number of orthographic, syntactic, semantic, pragmatic and dictionary-based attributes.

Text annotation is accomplished by individual processes called “Annotators” that are controlled by FEX according to a user-defined “Annotation Configuration.” FEX annotations are of three basic types. Expressed in terms of regular expressions, these are as follows: (1) token attributes, which have a one-per-base-token alignment, where for the attribute type represented, there is an attempt to assign an attribute value to each base token; (2) constituent attributes assigned yes-no values to patterns of base tokens, where the entire pattern is considered to be a single constituent with respect to some annotation value; and (3) links, which connect coreferring constituents such as names, their variants, and pronouns.

FEX identifies and extracts potentially interesting pieces of information in an annotated text by finding patterns in the attributes stored by the annotators. To find these patterns and extract the interesting facts, the user creates a RuBIE annotation file using a Rule-Based Information Extraction language (“the RuBIE pattern recognition language”) to write pattern recognition and extraction rules. This file queries for literal text, attributes, or relationships found in the annotations. It is these queries that actually define the facts to be extracted.

A key feature of FEX is that it provides a method for recognizing patterns in annotated text that both exploits all tree-based relationships and provides full regular expression-based pattern recognition. This feature is achieved by annotating the text with a markup language that allows representation of both hierarchical information and regular expressions.

As reflected in the language of the claims, the invention annotates the text with regular, expression-based attributes and with tree-based attributes; and then extracts facts from the annotated text using pattern recognition rules using regular, expression-based functionality, tree-based functionality, and auxiliary definitions in any combination.

GATE is an information extraction tool kit that provides a robust framework for integrating annotations from a number of diverse language technologies. The pattern matching language in GATE that is analogous to RuBIE is called JAPE (Java Annotations Patterns Engine), which Cunningham et al. describe as a regular expression matching mechanism that uses a directed graph of annotations as input. JAPE rules are manually crafted. They can be used for named entity recognition and sentence splitting, but there is no teaching or suggestion that they can concurrently be used for tree traversal functionality, as required by the claims of the present application.

In view of the foregoing, it is respectfully submitted that the invention as recited in independent claims 1, 16, 20, 26, and 41 is patentable over Cunningham et al.; and that the rejection should be withdrawn.

### Rejections under 35 U.S.C. § 103

#### 1. Claims 5-7, 22-24, 30-32, and 45-47

In paragraph 15 of the Office Action, claims 5-7, 22-24, 30-32, 45-47 were rejected under section 103(a) as being unpatentable over Cunningham et al. in view of Broder. Claim 2 has been canceled. This rejection is believed to be overcome by the amendment of independent claims 1, 16, 20, 26, and 41, from which the remaining rejected claims depend.

In the Office Action, Broder et al. was cited as teaching the use of independent annotators. However, Broder et al. does not remedy the deficiency of Cunningham et al. with respect to independent claims 1, 16, 20, 26, and 41, from which the rejected claims depend. Therefore, Cunningham et al. in combination with Broder et al. cannot teach or suggest the invention as recited in the rejected claims; and the rejection should be withdrawn.

#### 2. Claims 11, 36, and 51

In paragraph 16 of the Office Action, claims 11, 36, 51 are rejected under section 103(a) as being unpatentable over Cunningham in view of Marcus et al. (PENN Treebank). This rejection is believed to be overcome by the amendment of independent claims 1, 26, and 41, from which the rejected claims depend.

In the Office Action, Marcus et al. was cited as teaching the identification of non-contiguous attributes. However, Marcus et al. does not remedy the deficiency of Cunningham et al. with respect to independent claims 1, 26, and 41, from which the rejected claims depend. Therefore, Cunningham et al. in combination with Marcus et al. cannot teach or suggest the invention as recited in the rejected claims; and the rejection should be withdrawn.

### 3. Claims 13, 17, 38, and 53

In paragraph 17 of the Office Action, claims 13, 17, 38, 53 were rejected under section 103(a) as being unpatentable over Cunningham et al. in view of Feldman. Claims 13, 17, 38, and 53 have been canceled, their subject matter now being incorporated into independent claims 1, 16, 20, 26, and 41. To the extent the Examiner may consider this rejection to be applicable to independent claims 1, 16, 20, 26, and 41, it is believed to be overcome by their amendment.

In the Office Action, Feldman was cited as teaching XPath-based functionality. While Applicant agrees that Feldman does teach mining of text in a database that stores a hierarchical taxonomy of terms, and that uses the hierarchical taxonomy to mine the database, Feldman does not teach or suggest both exploiting tree-based relationships and providing full regular expression-based pattern recognition; and Feldman does not remedy the deficiency of Cunningham et al. with respect to independent claims 1, 16, 20, 26, and 41, from which the rejected claims depend. Therefore, Cunningham et al. in combination with Feldman cannot teach or suggest the invention as recited in the rejected claims; and the rejection should be withdrawn.

### Conclusion

All objections and rejections have been complied with, properly traversed, or rendered moot. Thus, it now appears that the application is in condition for allowance. Should any questions arise, the Examiner is invited to call the undersigned representative so that this case may receive an early Notice of Allowance.



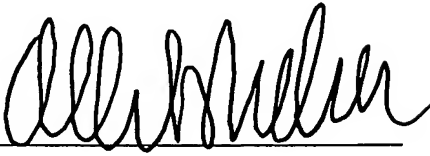
Favorable consideration and allowance are earnestly solicited.

Respectfully submitted,

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